CLEVELAND-CLIFFS INC.
Cleveland-Cliffs Minorca Mine Inc.
5950 Old Highway 53 N., Virginia, MN 55792
P 218.749.5910 clevelandcliffs.com

July 27th, 2022

Regional Administrator
Air and Radiation Division
U.S. Environmental Protection Agency, Region 5 (A-18J)
77 West Jackson Boulevard
Chicago, IL 60604

Re: Cleveland-Cliffs Minorca Mine Inc.
2nd Quarter 2022 Excess Emissions and Monitoring System Performance Reports
Federal Implementation Plan for Regional Haze (FIP)

On behalf of Cleveland-Cliffs Minorca Mine Inc. (Minorca), I am submitting the enclosed Excess Emissions and Monitoring System Performance Reports for the 2nd quarter of 2022 as required by 40 CFR 52.1235(e)(7). It should be noted that while the continuous emissions monitoring requirements of the FIP were in effect in the reporting period, the emission limitation for NO_x is not yet applicable. 40 CFR 52.1235(b)(1)(v)(A) specifies that the NO_x limitation will become enforceable *"...55 months after May 12, 2016 and only after EPA's confirmation or modification of the emission limit..."*.

Minorca submitted a revision of the 38.16 lb SO_2/hr on a 30-day rolling average limit to U.S. EPA in accordance with 40 CFR 52.1235(b)(2)(v) on April 6, 2018. That section of the FIP provides that Minorca "may calculate a revised SO_2 limit based on one year of hourly CEMS emissions data reported in lbs SO_2/hr and submit such limit, calculations, and CEMS data to EPA." This provision to modify the SO_2 limit exists because EPA recognized that the initial SO_2 limit was based on "limited stack test data" (78 Fed. Reg. 8718) and did not reflect the variability of Minorca's operations. The revised emission limit calculation methodology follows the provisions of 40 CFR 52.1235(b)(2)(v) and results in an updated emission limit of 58.64 lbs SO_2/hr based on a 30-day rolling average (prior to adjusting to account for operating levels of the Minorca furnace which were less than capacity during the data collection period). Adjusting to reflect the emissions associated with operation of the furnace at capacity using the above equation results in a limit of 73.79 lbs SO_2/hr based on a 30-day rolling average. The revised limit became effective on the April 6, 2018 date of submittal of the limit revision package.

These reports were developed following the procedures and practices described in the Site Specific Monitoring Plan (SSMP) required by 40 CFR 52.1235(e)(8) and submitted to EPA on December 1, 2016.

Please contact Jaime Johnson, Minorca's Environmental Manager, at (218) 305-3337 should you have any questions or comments regarding this report.

Sincerely,

Conor McCue
Operations Manager

Enclosed: 2nd Quarter 2022 Excess Emissions and Monitoring System Performance Reports
2nd Quarter 2022 CGA Summary Reports for SV 014-017, NO_x and SO_2

cc: Jaime Johnson (Cleveland-Cliffs Minorca Mine Inc.)

Quarterly Excess Emissions and Monitoring System Performance Report

EU 026 Combined SO2 Emissions and Analyzer Downtime

From: 04/01/2022 00:00 **To:** 06/30/2022 23:59
Generated: 07/05/2022 12:42

Facility Name: Cleveland-Cliffs Minorca Mine Inc
Location: 5950 Old Hwy 53, Virginia, MN 55792
Description: Indurating Furnace (EU 026)

CLIFFS

CMS Data from: EU26_SO2_30D_LbPerHr_1D
EDS Data from: EU26_SO2_30D_LbPerHr_1D
Emission Limitation: 58.64 lb SO2/hr / 73.79 lb SO2/hr, 30-day rolling average. See Footnote [1].
Monitor Manufacturer, Model No., & Serial: See downtime reports for individual stacks.
Date of Latest CMS Certification or Audit: See downtime reports for individual stacks.
Operating time for EDS: 54.79 Day(s)
Operating time for CMS: 54.79 Day(s)

Emission Data Summary		
1.	Duration of excess emission in reporting period due to:	
	a. Startup/shutdown	0
	b. Control equipment problems	0
	c. Process Problems	0
	d. Other known causes	0
	e. Unknown causes	0
2.	Upset Conditions	0
3.	Total Duration (Subtracts Exclusions and Upset Conditions)	0
4.	Time of Excess Emission as a percentage of operating time	0.00
5.	Time in compliance as percentage of operating time	100.00

CMS Performance Summary		
1.	CMS downtime in reporting period due to:	
	a. Monitor equipment malfunctions	0
	b. Non-Monitor equipment malfunctions	0
	c. Quality assurance calibration	0
	d. Other known causes	0
	e. Unknown causes	0
2.	Total CMS Downtime	0
3.	Total Downtime as a percentage of operating time	0.00
4.	Total Availability as a percentage of operating time	100.00

[1] Minorca established the 58.64 lb SO2/hr on a 30-day rolling average basis limit via submittal of one year of CEMS data to the EPA on April 6, 2018 (prior to adjusting to account for operating levels of the Minorca furnace which were less than capacity during the data collection period). Adjusting to reflect the emissions associated with operation of the furnace at capacity using the above equation results in a limit of 73.79 lbs SO2/hr based on a 30-day rolling average.

There were no periods of excess emissions during this reporting period.

There were no periods of monitor downtime during this reporting period except for the daily zero and span checks.

CMS downtime reported for EU026 SO2 monitoring includes all downtime from the SO2 concentration and Stack Flow analyzers installed on SV014, SV015, SV016, and SV017 if the minimum data availability required by 52.1235(c)(4)(viii)(C) are not met after the application of secondary data calculations used to determine "emission rates when CEMS data is not available due to downtime associated with QA/QC events" as required by 40 CFR 52.1235(e)(8)(iv). These calculations are described in detail within the site specific monitoring plan (SSMP) which was submitted to the EPA per the requirements of 40 CFR 52.1235(e)(8). Please refer to the downtime reports for the individual stack analyzers for details on their operation during the reporting period.

There were no changes in continuous monitoring systems, processes, or controls that would have invalidated the CEMS certification test or adversely affected its ability to accurately measure the emissions from the indurating furnace during this reporting period.

Quarterly Excess Emissions and Monitoring System Performance Report

EU 026 - Combined NOx Emissions and Monitor Downtime

From: 04/01/2022 00:00 **To:** 06/30/2022 23:59
Generated: 07/05/2022 12:42

Facility Name: Cleveland-Cliffs Minorca Mine Inc
Location: 5950 Old Hwy 53, Virginia, MN
Description: Indurating Furnace (EU 026)

CMS Data from: EU26_NOx_30D_LbPerMBtu_1D
EDS Data from: N/A
Emission Limitation: N/A

Monitor Manufacturer, Model No., & Serial: See downtime reports for individual
Date of Latest CMS Certification or Audit: See downtime reports for individual
Operating time for CMS: 54.79 Day(s)

CMS Performance Summary	
1. CMS downtime in reporting period due to:	
a. Monitor equipment malfunctions	0
b. Non-Monitor equipment malfunctions	0
c. Quality assurance calibration	0
d. Other known causes	0
e. Unknown causes	0
2. Total CMS Downtime	0
3. Total Downtime as a percentage of operating time	0.00
4. Total Availability as a percentage of operating time	100.00

There were no periods of excess emissions during this reporting period.

There were no periods of monitor downtime during this reporting period except for the daily zero and span checks.

CMS downtime reported for EU026 NOx monitoring includes all downtime from the NOx concentration and Stack Flow analyzers installed on SV014, SV015, SV016, and SV017 if the minimum data availability required by 52.1235(c)(4)(viii)(C) are not met after the application of secondary data calculations used to determine "emission rates when CEMS data is not available due to downtime associated with QA/QC events" as required by 40 CFR 52.1235(e)(8)(iv). These calculations are described in detail within the site specific monitoring plan (SSMP) which was submitted to the EPA per the requirements of 40 CFR 52.1235(e)(8). Please refer to the downtime reports for the individual stack analyzers for details on their operation during the reporting period.

There were no changes in continuous monitoring systems, processes, or controls that would have invalidated the CEMS certification test or adversely affected its ability to accurately measure the emissions from the indurating furnace during this reporting period.

Quarterly Excess Emissions and Monitoring System Performance Report
SV 014 Flow Analyzer Downtime

From: 04/01/2022 00:00 **To:** 06/30/2022 23:59
Generated: 07/05/2022 12:42

Facility Name: Cleveland-Cliffs Minorca Mine Inc
Location: 5950 Old Hwy 53, Virginia, MN 55792
Description: Indurating Furnace (EU 026)

CMS Data from: SV14_StackFlow_scfh_1H
EDS Data from: N/A
Emission Limitation: No limits apply to individual stacks.
Monitor Manufacturer, Model No., & Serial: Sic Flowsic, 100H, 13088519
Date of Latest CMS Certification or Audit: 7/28/2021 (via NOx RATA)
Operating time for CMS: 1,315.00 Hour(s)

CMS Performance Summary	
1. CMS downtime in reporting period due to:	
a. Monitor equipment malfunctions	0
b. Non-Monitor equipment malfunctions	0
c. Quality assurance calibration	0
d. Other known causes	0
e. Unknown causes	0
2. Total CMS Downtime	0
3. Total Downtime as a percentage of operating time	0.00
4. Total Availability as a percentage of operating time	100.00

There were no periods of monitor downtime during this reporting period except for the daily zero and span checks.

There were no changes in continuous monitoring systems, processes, or controls that would have invalidated the CEMS certification test or adversely affected its ability to accurately measure the emissions from the indurating furnace during this reporting period.

Quarterly Excess Emissions and Monitoring System Performance Report

SV014 NOx Analyzer Downtime

From: 04/01/2022 00:00 **To:** 06/30/2022 23:59
Generated: 07/05/2022 12:42

Facility Name: Cleveland-Cliffs Minorca Mine Inc
Location: 5950 Old Hwy 53, Virginia, MN 55792
Description: Indurating Furnace (EU 026)

CLIFFS

CMS Data from: SV14_NOx_Ppm_1H
EDS Data from: N/A
Emission Limitation: No limits apply to individual stacks.
Monitor Manufacturer, Model No., & Serial: TAPI, T200H, 252
Date of Latest CMS Certification or Audit: 5/4/2022
Operating time for CMS: 1,315.00 Hour(s)

CMS Performance Summary	
1. CMS downtime in reporting period due to:	
a. Monitor equipment malfunctions	0
b. Non-Monitor equipment malfunctions	0
c. Quality assurance calibration	0
d. Other known causes	0
e. Unknown causes	0
2. Total CMS Downtime	0
3. Total Downtime as a percentage of operating time	0.00
4. Total Availability as a percentage of operating time	100.00

There were no periods of monitor downtime during this reporting period except for the daily zero and span checks.

There were no changes in continuous monitoring systems, processes, or controls that would have invalidated the CEMS certification test or adversely affected its ability to accurately measure the emissions from the indurating furnace during this reporting period.

Quarterly Excess Emissions and Monitoring System Performance Report
SV014 SO2 Analyzer Downtime

From: 04/01/2022 00:00 **To:** 06/30/2022 23:59
Generated: 07/05/2022 12:42

Facility Name: Cleveland-Cliffs Minorca Mine Inc
Location: 5950 Old Hwy 53, Virginia, MN 55792
Description: Indurating Furnace (EU 026)

CMS Data from: SV14_SO2_Ppm_1H
EDS Data from: N/A
Emission Limitation: No limits apply to individual stacks.
Monitor Manufacturer, Model No., & Serial: TAPI, T100H, 143
Date of Latest CMS Certification or Audit: 5/4/2022
Operating time for CMS: 1,315.00 Hour(s)

CMS Performance Summary	
1. CMS downtime in reporting period due to:	
a. Monitor equipment malfunctions	0
b. Non-Monitor equipment malfunctions	0
c. Quality assurance calibration	0
d. Other known causes	0
e. Unknown causes	0
2. Total CMS Downtime	0
3. Total Downtime as a percentage of operating time	0.00
4. Total Availability as a percentage of operating time	100.00

There were no periods of monitor downtime during this reporting period except for the daily zero and span checks.

There were no changes in continuous monitoring systems, processes, or controls that would have invalidated the CEMS certification test or adversely affected its ability to accurately measure the emissions from the indurating furnace during this reporting period.

Quarterly Excess Emissions and Monitoring System Performance Report
SV15 Flow Analyzer Downtime

From: 04/01/2022 00:00 **To:** 06/30/2022 23:59
Generated: 07/05/2022 12:42

Facility Name: Cleveland-Cliffs Minorca Mine Inc
Location: 5950 Old Hwy 53, Virginia, MN 55792
Description: Indurating Furnace (EU 026)

CLIFFS

CMS Data from: SV15_StackFlow_scfh_1H
EDS Data from: N/A
Emission Limitation: No limits apply to individual stacks.
Monitor Manufacturer, Model No., & Serial: Sic Flowsic, 100H, 13178539
Date of Latest CMS Certification or Audit: 7/29/2021 (via NOx RATA)
Operating time for CMS: 1,315.00 Hour(s)

CMS Performance Summary	
1. CMS downtime in reporting period due to:	
a. Monitor equipment malfunctions	0
b. Non-Monitor equipment malfunctions	0
c. Quality assurance calibration	0
d. Other known causes	0
e. Unknown causes	0
2. Total CMS Downtime	0
3. Total Downtime as a percentage of operating time	0.00
4. Total Availability as a percentage of operating time	100.00

There were no periods of monitor downtime during this reporting period except for the daily zero and span checks.

There were no changes in continuous monitoring systems, processes, or controls that would have invalidated the CEMS certification test or adversely affected its ability to accurately measure the emissions from the indurating furnace during this reporting period.

Quarterly Excess Emissions and Monitoring System Performance Report

SV015 NOx Analyzer Downtime

From: 04/01/2022 00:00 **To:** 06/30/2022 23:59
Generated: 07/05/2022 12:42

Facility Name: Cleveland-Cliffs Minorca Mine Inc
Location: 5950 Old Hwy 53, Virginia, MN 55792
Description: Indurating Furnace (EU 026)

CLIFFS

CMS Data from: SV15_NOx_Ppm_1H
EDS Data from: N/A
Emission Limitation: No limits apply to individual stacks.
Monitor Manufacturer, Model No., & Serial: TAPI, T200H, 250
Date of Latest CMS Certification or Audit: 5/4/2022
Operating time for CMS: 1,315.00 Hour(s)

CMS Performance Summary	
1. CMS downtime in reporting period due to:	
a. Monitor equipment malfunctions	0
b. Non-Monitor equipment malfunctions	0
c. Quality assurance calibration	0
d. Other known causes	0
e. Unknown causes	0
2. Total CMS Downtime	0
3. Total Downtime as a percentage of operating time	0.00
4. Total Availability as a percentage of operating time	100.00

There were no periods of monitor downtime during this reporting period except for the daily zero and span checks.

There were no changes in continuous monitoring systems, processes, or controls that would have invalidated the CEMS certification test or adversely affected its ability to accurately measure the emissions from the indurating furnace during this reporting period.

Quarterly Excess Emissions and Monitoring System Performance Report

SV015 SO2 Analyzer Downtime

From: 04/01/2022 00:00 **To:** 06/30/2022 23:59
Generated: 07/05/2022 12:42

Facility Name: Cleveland-Cliffs Minorca Mine Inc
Location: 5950 Old Hwy 53, Virginia, MN 55792
Description: Indurating Furnace (EU 026)

CLIFFS

CMS Data from: SV15_SO2_Ppm_1H
EDS Data from: N/A
Emission Limitation: No limits apply to individual stacks.
Monitor Manufacturer, Model No., & Serial: TAPI, T100H, 142
Date of Latest CMS Certification or Audit: 5/4/2022
Operating time for CMS: 1,315.00 Hour(s)

CMS Performance Summary	
1. CMS downtime in reporting period due to:	
a. Monitor equipment malfunctions	0
b. Non-Monitor equipment malfunctions	0
c. Quality assurance calibration	0
d. Other known causes	0
e. Unknown causes	0
2. Total CMS Downtime	0
3. Total Downtime as a percentage of operating time	0.00
4. Total Availability as a percentage of operating time	100.00

There were no periods of monitor downtime during this reporting period except for the daily zero and span checks.

There were no changes in continuous monitoring systems, processes, or controls that would have invalidated the CEMS certification test or adversely affected its ability to accurately measure the emissions from the indurating furnace during this reporting period.

Quarterly Excess Emissions and Monitoring System Performance Report
SV016 Flow Analyzer Downtime

From: 04/01/2022 00:00 **To:** 06/30/2022 23:59
Generated: 07/05/2022 12:42

Facility Name: Cleveland-Cliffs Minorca Mine Inc
Location: 5950 Old Hwy 53, Virginia, MN 55792
Description: Indurating Furnace (EU 026)

CLIFFS

CMS Data from: SV16_StackFlow_scfh_1H
EDS Data from: N/A
Emission Limitation: No limits apply to individual stacks.
Monitor Manufacturer, Model No., & Serial: Sic Flowsic, 100H, 13088520
Date of Latest CMS Certification or Audit: 7/28/2021 (via NOx RATA)
Operating time for CMS: 1,315.00 Hour(s)

CMS Performance Summary	
1. CMS downtime in reporting period due to:	
a. Monitor equipment malfunctions	0
b. Non-Monitor equipment malfunctions	0
c. Quality assurance calibration	0
d. Other known causes	0
e. Unknown causes	0
2. Total CMS Downtime	0
3. Total Downtime as a percentage of operating time	0.00
4. Total Availability as a percentage of operating time	100.00

There were no periods of monitor downtime during this reporting period except for the daily zero and span checks.

There were no changes in continuous monitoring systems, processes, or controls that would have invalidated the CEMS certification test or adversely affected its ability to accurately measure the emissions from the indurating furnace during this reporting period.

Quarterly Excess Emissions and Monitoring System Performance Report

SV016 NOx Analyzer Downtime

From: 04/01/2022 00:00 **To:** 06/30/2022 23:59
Generated: 07/05/2022 12:42

Facility Name: Cleveland-Cliffs Minorca Mine Inc
Location: 5950 Old Hwy 53, Virginia, MN 55792
Description: Indurating Furnace (EU 026)

CLIFFS

CMS Data from: SV16_NOx_Ppm_1H
EDS Data from: N/A
Emission Limitation: No limits apply to individual stacks.
Monitor Manufacturer, Model No., & Serial: TAPI, T200H, 249
Date of Latest CMS Certification or Audit: 5/4/2022
Operating time for CMS: 1,315.00 Hour(s)

CMS Performance Summary	
1. CMS downtime in reporting period due to:	
a. Monitor equipment malfunctions	23
b. Non-Monitor equipment malfunctions	0
c. Quality assurance calibration	0
d. Other known causes	0
e. Unknown causes	0
2. Total CMS Downtime	23
3. Total Downtime as a percentage of operating time	1.75
4. Total Availability as a percentage of operating time	98.25

Beginning Date and Time of Downtime	End Date and Time of Downtime	Duration of Downtime	Reason for Monitor Downtime	Corrective Action Taken
06/16/2022 09:00	06/16/2022 13:59	5 hr.	Monitor equipment malfunctions	Changed NO2 converter after CEMS technician noticed low readings when gas flowed to the analyzer. New NO2 converter requires a 24-hour "burn-in" period per manufacturer's guidance*
06/16/2022 16:00	06/17/2022 09:59	18 hr.	Monitor equipment malfunctions	Changed NO2 converter after CEMS technician noticed low readings when gas flowed to the analyzer. New NO2 converter requires a 24-hour "burn-in" period per manufacturer's guidance*

***Due to a furnace shutdown, this incident was split into two separate events by our CEMS monitoring system.**

There were no changes in continuous monitoring systems, processes, or controls that would have invalidated the CEMS certification test or adversely affected its ability to accurately measure the emissions from the indurating furnace during this reporting period.

Quarterly Excess Emissions and Monitoring System Performance Report
SV016 SO2 Analyzer Downtime

From: 04/01/2022 00:00 **To:** 06/30/2022 23:59
Generated: 07/05/2022 12:42

Facility Name: Cleveland-Cliffs Minorca Mine Inc
Location: 5950 Old Hwy 53, Virginia, MN 55792
Description: Indurating Furnace (EU 026)

CLIFFS

CMS Data from: SV16_SO2_Ppm_1H
EDS Data from: N/A
Emission Limitation: No limits apply to individual stacks.
Monitor Manufacturer, Model No., & Serial: TAPI, T100H, 144
Date of Latest CMS Certification or Audit: 5/4/2022
Operating time for CMS: 1,315.00 Hour(s)

CMS Performance Summary	
1. CMS downtime in reporting period due to:	
a. Monitor equipment malfunctions	0
b. Non-Monitor equipment malfunctions	0
c. Quality assurance calibration	0
d. Other known causes	0
e. Unknown causes	0
2. Total CMS Downtime	0
3. Total Downtime as a percentage of operating time	0.00
4. Total Availability as a percentage of operating time	100.00

There were no periods of monitor downtime during this reporting period except for the daily zero and span checks.

There were no changes in continuous monitoring systems, processes, or controls that would have invalidated the CEMS certification test or adversely affected its ability to accurately measure the emissions from the indurating furnace during this reporting period.

Quarterly Excess Emissions and Monitoring System Performance Report
SV017 Flow Analyzer Downtime

From: 04/01/2022 00:00 **To:** 06/30/2022 23:59
Generated: 07/05/2022 12:42

Facility Name: Cleveland-Cliffs Minorca Mine Inc
Location: 5950 Old Hwy 53, Virginia, MN 55792
Description: Indurating Furnace (EU 026)

CLIFFS

CMS Data from: SV17_StackFlow_scfh_1H
EDS Data from: N/A
Emission Limitation: No limits apply to individual stacks.
Monitor Manufacturer, Model No., & Serial: Sic Flowsic, 100H, 13078504
Date of Latest CMS Certification or Audit: 7/29/2021 (via NOx RATA)
Operating time for CMS: 1,315.00 Hour(s)

CMS Performance Summary	
1. CMS downtime in reporting period due to:	
a. Monitor equipment malfunctions	0
b. Non-Monitor equipment malfunctions	0
c. Quality assurance calibration	0
d. Other known causes	0
e. Unknown causes	0
2. Total CMS Downtime	0
3. Total Downtime as a percentage of operating time	0.00
4. Total Availability as a percentage of operating time	100.00

There were no periods of monitor downtime during this reporting period except for the daily zero and span checks.

There were no changes in continuous monitoring systems, processes, or controls that would have invalidated the CEMS certification test or adversely affected its ability to accurately measure the emissions from the indurating furnace during this reporting period.

Quarterly Excess Emissions and Monitoring System Performance Report

SV017 NOx Analyzer Downtime

From: 04/01/2022 00:00 **To:** 06/30/2022 23:59
Generated: 07/05/2022 12:42

Facility Name: Cleveland-Cliffs Minorca Mine Inc
Location: 5950 Old Hwy 53, Virginia, MN 55792
Description: Indurating Furnace (EU 026)

CMS Data from: SV17_NOx_Ppm_1H
EDS Data from: N/A
Emission Limitation: No limits apply to individual stacks.
Monitor Manufacturer, Model No., & Serial: TAPI, T200H, 251
Date of Latest CMS Certification or Audit: 5/4/2022
Operating time for CMS: 1,315.00 Hour(s)

CMS Performance Summary	
1. CMS downtime in reporting period due to:	
a. Monitor equipment malfunctions	103
b. Non-Monitor equipment malfunctions	0
c. Quality assurance calibration	0
d. Other known causes	0
e. Unknown causes	0
2. Total CMS Downtime	103
3. Total Downtime as a percentage of operating time	7.83
4. Total Availability as a percentage of operating time	92.17

Beginning Date and Time of Downtime	End Date and Time of Downtime	Duration of Downtime	Reason for Monitor Downtime	Corrective Action Taken
04/01/2022 00:00	04/03/2022 17:59	66 hr.	Monitor equipment malfunctions	Loose bolts between the probe and box gasket caused a gradual O2 leak to occur. Upon identifiction, the bolts were tightened addressing a leak. O2 readings have been implemented as part of the daily checks. *
04/03/2022 22:00	04/05/2022 10:59	37 hr.	Monitor equipment malfunctions	Loose bolts between the probe and box gasket caused a gradual O2 leak to occur. Upon identifiction, the bolts were tightened addressing a leak. O2 readings have been implemented as part of the daily checks. *

***Due to a furnace shutdown, this incident was split into two separate events by our CEMS monitoring system.**

There were no changes in continuous monitoring systems, processes, or controls that would have invalidated the CEMS certification test or adversely affected its ability to accurately measure the emissions from the indurating furnace during this reporting period.

Quarterly Excess Emissions and Monitoring System Performance Report
SV017 SO2 Analyzer Downtime

From: 04/01/2022 00:00 **To:** 06/30/2022 23:59
Generated: 07/05/2022 12:42

Facility Name: Cleveland-Cliffs Minorca Mine Inc
Location: 5950 Old Hwy 53, Virginia, MN 55792
Description: Indurating Furnace (EU 026)

CLIFFS

CMS Data from: SV17_SO2_Ppm_1H
EDS Data from: N/A
Emission Limitation: No limits apply to individual stacks.
Monitor Manufacturer, Model No., & Serial: TAPI, T100H, 145
Date of Latest CMS Certification or Audit: 5/4/2022
Operating time for CMS: 1,315.00 Hour(s)

CMS Performance Summary	
1. CMS downtime in reporting period due to:	
a. Monitor equipment malfunctions	103
b. Non-Monitor equipment malfunctions	0
c. Quality assurance calibration	0
d. Other known causes	0
e. Unknown causes	0
2. Total CMS Downtime	103
3. Total Downtime as a percentage of operating time	7.83
4. Total Availability as a percentage of operating time	92.17

Beginning Date and Time of Downtime	End Date and Time of Downtime	Duration of Downtime	Reason for Monitor Downtime	Corrective Action Taken
04/01/2022 00:00	04/03/2022 17:59	66 hr.	Monitor equipment malfunctions	Loose bolts between the probe and box gasket caused a gradual O2 leak to occur. Upon identifiction, the bolts were tightened addressing a leak. O2 readings have been implemented as part of the daily checks. *
04/03/2022 22:00	04/05/2022 10:59	37 hr.	Monitor equipment malfunctions	Loose bolts between the probe and box gasket caused a gradual O2 leak to occur. Upon identifiction, the bolts were tightened addressing a leak. O2 readings have been implemented as part of the daily checks. *

***Due to a furnace shutdown, this incident was split into two separate events by our CEMS monitoring system.**

There were no changes in continuous monitoring systems, processes, or controls that would have invalidated the CEMS certification test or adversely affected its ability to accurately measure the emissions from the indurating furnace during this reporting period.

Quarterly Cal Report

Stack A (SV14) - NOx Instrument

From: 04/01/2022 00:00 **To:** 06/30/2022 23:59 **Facility Name:** Cleveland Cliffs Minorca Mine Inc

Generated: 07/12/2022 09:41 **Location:** 5950 Old Hwy 53, Virginia, MN 55792

Instrument Name: SV14_NOX_P_Instrument High Range **Serial Number:** 252

Calibration Time	Cal Gas Level	Span Value	Reference Value	Actual Value	Ref Value As Pct Span
05/04/22 09:59	Low	250.0	60.8	60.2	24.3 %
05/04/22 10:03	Mid	250.0	139.9	140.4	56.0 %
05/04/22 10:07	Low	250.0	60.8	60.5	24.3 %
05/04/22 10:11	Mid	250.0	139.9	140.3	56.0 %
05/04/22 10:15	Low	250.0	60.8	60.6	24.3 %
05/04/22 10:19	Mid	250.0	139.9	140.2	56.0 %

Overall Result: Pass

Cal Gas Level	Reference Mean	Actual Mean	Alt Perf Spec	Result	Cylinder Id	Expiration Date
Low	60.800	60.400	0	0.6	CC285322	02/26/27 13:24
Mid	139.900	140.300	0	0.3	CC130313	11/09/23 13:25

Quarterly Cal Report

Stack A (SV14) - O2 Instrument

From: 04/01/2022 00:00 **To:** 06/30/2022 23:59 **Facility Name:** Cleveland Cliffs Minorca Mine Inc

Generated: 07/12/2022 09:44 **Location:** 5950 Old Hwy 53, Virginia, MN 55792

Instrument Name: SV14_O2D_P_Instrument High Range **Serial Number:** 197

Calibration Time	Cal Gas Level	Span Value	Reference Value	Actual Value	Ref Value As Pct Span
05/04/22 11:12	Low	20.9	5.5	5.5	26.4 %
05/04/22 11:18	Mid	20.9	10.0	9.9	47.8 %
05/04/22 11:24	Low	20.9	5.5	5.5	26.4 %
05/04/22 11:30	Mid	20.9	10.0	9.9	47.8 %
05/04/22 11:36	Low	20.9	5.5	5.5	26.4 %
05/04/22 11:42	Mid	20.9	10.0	9.9	47.8 %

Overall Result: Pass

Cal Gas Level	Reference Mean	Actual Mean	Alt Perf Spec	Result	Cylinder Id	Expiration Date
Low	5.500	5.500	0	0.5	CC521782	12/20/25 05:34
Mid	10.000	9.900	0	1.0	CC521808	12/13/25 05:35

Quarterly Cal Report

Stack A (SV14) - SO2 Instrument

From: 04/01/2022 00:00 **To:** 06/30/2022 23:59 **Facility Name:** Cleveland Cliffs Minorca Mine Inc

Generated: 07/12/2022 09:45 **Location:** 5950 Old Hwy 53, Virginia, MN 55792

Instrument Name: SV14_SO2_P_Instrument High Range **Serial Number:** 143

Calibration Time	Cal Gas Level	Span Value	Reference Value	Actual Value	Ref Value As Pct Span
05/04/22 11:12	Low	20.0	5.0	5.1	25.2 %
05/04/22 11:18	Mid	20.0	11.1	11.6	55.5 %
05/04/22 11:24	Low	20.0	5.0	5.3	25.2 %
05/04/22 11:30	Mid	20.0	11.1	11.6	55.5 %
05/04/22 11:36	Low	20.0	5.0	5.3	25.2 %
05/04/22 11:42	Mid	20.0	11.1	11.7	55.5 %

Overall Result: Pass

Cal Gas Level	Reference Mean	Actual Mean	Alt Perf Spec	Result	Cylinder Id	Expiration Date
Low	5.000	5.200	0	3.8	CC521782	12/20/25 05:36
Mid	11.100	11.600	0	4.9	CC521808	12/13/25 05:37

Quarterly Cal Report

Stack B (SV15) - NOx Instrument

From: 04/01/2022 00:00 **To:** 06/30/2022 23:59 **Facility Name:** Cleveland Cliffs Minorca Mine Inc

Generated: 07/12/2022 09:46 **Location:** 5950 Old Hwy 53, Virginia, MN 55792

Instrument Name: SV15_NOX_P_Instrument High Range **Serial Number:** 250

Calibration Time	Cal Gas Level	Span Value	Reference Value	Actual Value	Ref Value As Pct Span
05/04/22 09:59	Mid	250.0	139.9	139.1	56.0 %
05/04/22 10:03	Low	250.0	60.8	59.4	24.3 %
05/04/22 10:07	Mid	250.0	139.9	139.8	56.0 %
05/04/22 10:11	Low	250.0	60.8	59.8	24.3 %
05/04/22 10:15	Mid	250.0	139.9	140.2	56.0 %
05/04/22 10:19	Low	250.0	60.8	59.9	24.3 %

Overall Result: Pass

Cal Gas Level	Reference Mean	Actual Mean	Alt Perf Spec	Result	Cylinder Id	Expiration Date
Mid	139.900	139.700	0	0.1	CC130313	11/09/23 13:25
Low	60.800	59.700	0	1.8	CC285322	02/26/27 13:24

Quarterly Cal Report

Stack B (SV15) - O2 Instrument

From: 04/01/2022 00:00 **To:** 06/30/2022 23:59 **Facility Name:** Cleveland Cliffs Minorca Mine Inc

Generated: 07/12/2022 09:46 **Location:** 5950 Old Hwy 53, Virginia, MN 55792

Instrument Name: SV15_O2D_P_Instrument High Range **Serial Number:** 250

Calibration Time	Cal Gas Level	Span Value	Reference Value	Actual Value	Ref Value As Pct Span
05/04/22 11:12	Mid	20.9	10.0	9.9	47.8 %
05/04/22 11:18	Low	20.9	5.5	5.4	26.4 %
05/04/22 11:24	Mid	20.9	10.0	9.9	47.8 %
05/04/22 11:30	Low	20.9	5.5	5.4	26.4 %
05/04/22 11:36	Mid	20.9	10.0	9.8	47.8 %
05/04/22 11:42	Low	20.9	5.5	5.4	26.4 %

Overall Result: Pass

Cal Gas Level	Reference Mean	Actual Mean	Alt Perf Spec	Result	Cylinder Id	Expiration Date
Mid	10.000	9.900	0	1.3	CC521808	12/13/25 05:35
Low	5.500	5.400	0	2.3	CC521782	12/20/25 05:34

Quarterly Cal Report

Stack B (SV15) - SO2 Instrument

From: 04/01/2022 00:00 **To:** 06/30/2022 23:59 **Facility Name:** Cleveland Cliffs Minorca Mine Inc

Generated: 07/12/2022 09:47 **Location:** 5950 Old Hwy 53, Virginia, MN 55792

Instrument Name: SV15_SO2_P_Instrument High Range **Serial Number:** 142

Calibration Time	Cal Gas Level	Span Value	Reference Value	Actual Value	Ref Value As Pct Span
05/04/22 11:12	Mid	20.0	11.1	11.3	55.5 %
05/04/22 11:18	Low	20.0	5.0	5.1	25.2 %
05/04/22 11:24	Mid	20.0	11.1	11.2	55.5 %
05/04/22 11:30	Low	20.0	5.0	5.1	25.2 %
05/04/22 11:36	Mid	20.0	11.1	11.3	55.5 %
05/04/22 11:42	Low	20.0	5.0	5.1	25.2 %

Overall Result: Pass

Cal Gas Level	Reference Mean	Actual Mean	Alt Perf Spec	Result	Cylinder Id	Expiration Date
Mid	11.100	11.300	0	1.6	CC521808	12/13/25 05:37
Low	5.000	5.100	0	1.2	CC521782	12/20/25 05:36

Quarterly Cal Report

Stack C (SV16) - NOx Instrument

From: 04/01/2022 00:00 **To:** 06/30/2022 23:59 **Facility Name:** Cleveland Cliffs Minorca Mine Inc

Generated: 07/12/2022 09:47 **Location:** 5950 Old Hwy 53, Virginia, MN 55792

Instrument Name: SV16_NOX_P_Instrument High Range **Serial Number:** 249

Calibration Time	Cal Gas Level	Span Value	Reference Value	Actual Value	Ref Value As Pct Span
05/04/22 10:29	Low	450.0	113.6	114.2	25.2 %
05/04/22 10:33	Mid	450.0	248.9	244.7	55.3 %
05/04/22 10:37	Low	450.0	113.6	114.7	25.2 %
05/04/22 10:42	Mid	450.0	248.9	245.5	55.3 %
05/04/22 10:46	Low	450.0	113.6	114.7	25.2 %
05/04/22 10:50	Mid	450.0	248.9	245.6	55.3 %

Overall Result: Pass

Cal Gas Level	Reference Mean	Actual Mean	Alt Perf Spec	Result	Cylinder Id	Expiration Date
Low	113.600	114.500	0	0.8	CC118291	02/19/27 13:36
Mid	248.900	245.300	0	1.5	EB0093175	02/15/27 13:37

Quarterly Cal Report

Stack C (SV16) - O2 Instrument

From: 04/01/2022 00:00 **To:** 06/30/2022 23:59 **Facility Name:** Cleveland Cliffs Minorca Mine Inc

Generated: 07/12/2022 09:48 **Location:** 5950 Old Hwy 53, Virginia, MN 55792

Instrument Name: SV16_O2D_P_Instrument High Range **Serial Number:** 249

Calibration Time	Cal Gas Level	Span Value	Reference Value	Actual Value	Ref Value As Pct Span
05/04/22 13:30	Low	20.9	5.5	5.3	26.4 %
05/04/22 13:36	Mid	20.9	10.0	9.8	47.8 %
05/04/22 13:42	Low	20.9	5.5	5.3	26.4 %
05/04/22 13:48	Mid	20.9	10.0	9.8	47.8 %
05/04/22 13:56	Low	20.9	5.5	5.3	26.4 %
05/04/22 14:00	Mid	20.9	10.0	9.8	47.8 %

Overall Result: Pass

Cal Gas Level	Reference Mean	Actual Mean	Alt Perf Spec	Result	Cylinder Id	Expiration Date
Low	5.500	5.300	0	4.1	CC521782	12/20/25 05:34
Mid	10.000	9.800	0	2.0	CC521808	12/13/25 05:35

Quarterly Cal Report

Stack C (SV16) - SO2 Instrument

From: 04/01/2022 00:00 **To:** 06/30/2022 23:59 **Facility Name:** Cleveland Cliffs Minorca Mine Inc

Generated: 07/12/2022 09:48 **Location:** 5950 Old Hwy 53, Virginia, MN 55792

Instrument Name: SV16_SO2_P_Instrument High Range **Serial Number:** 144

Calibration Time	Cal Gas Level	Span Value	Reference Value	Actual Value	Ref Value As Pct Span
05/04/22 13:30	Low	20.0	5.0	5.1	25.2 %
05/04/22 13:36	Mid	20.0	11.1	11.4	55.5 %
05/04/22 13:42	Low	20.0	5.0	5.2	25.2 %
05/04/22 13:48	Mid	20.0	11.1	11.5	55.5 %
05/04/22 13:56	Low	20.0	5.0	5.3	25.2 %
05/04/22 14:00	Mid	20.0	11.1	11.4	55.5 %

Overall Result: Pass

Cal Gas Level	Reference Mean	Actual Mean	Alt Perf Spec	Result	Cylinder Id	Expiration Date
Low	5.000	5.200	0	3.2	CC521782	12/20/25 05:36
Mid	11.100	11.400	0	3.1	CC521808	12/13/25 05:37

Quarterly Cal Report

Stack D (SV17) - NOx Instrument

From: 04/01/2022 00:00 **To:** 06/30/2022 23:59 **Facility Name:** Cleveland Cliffs Minorca Mine Inc

Generated: 07/12/2022 09:49 **Location:** 5950 Old Hwy 53, Virginia, MN 55792

Instrument Name: SV17_NOX_P_Instrument High Range **Serial Number:** 251

Calibration Time	Cal Gas Level	Span Value	Reference Value	Actual Value	Ref Value As Pct Span
05/04/22 10:29	Mid	450.0	248.9	238.8	55.3 %
05/04/22 10:33	Low	450.0	113.6	112.1	25.2 %
05/04/22 10:37	Mid	450.0	248.9	240.8	55.3 %
05/04/22 10:42	Low	450.0	113.6	111.7	25.2 %
05/04/22 10:46	Mid	450.0	248.9	241.3	55.3 %
05/04/22 10:50	Low	450.0	113.6	111.9	25.2 %

Overall Result: Pass

Cal Gas Level	Reference Mean	Actual Mean	Alt Perf Spec	Result	Cylinder Id	Expiration Date
Mid	248.900	240.300	0	3.5	EB0093175	02/15/27 13:37
Low	113.600	111.900	0	1.5	CC118291	02/19/27 13:36

Quarterly Cal Report

Stack D (SV17) - O2 Instrument

From: 04/01/2022 00:00 **To:** 06/30/2022 23:59 **Facility Name:** Cleveland Cliffs Minorca Mine Inc

Generated: 07/12/2022 09:49 **Location:** 5950 Old Hwy 53, Virginia, MN 55792

Instrument Name: SV17_O2D_P_Instrument High Range **Serial Number:** 251

Calibration Time	Cal Gas Level	Span Value	Reference Value	Actual Value	Ref Value As Pct Span
05/04/22 13:30	Mid	20.9	10.0	9.9	47.8 %
05/04/22 13:36	Low	20.9	5.5	5.5	26.4 %
05/04/22 13:42	Mid	20.9	10.0	9.9	47.8 %
05/04/22 13:48	Low	20.9	5.5	5.4	26.4 %
05/04/22 13:56	Mid	20.9	10.0	9.9	47.8 %
05/04/22 14:00	Low	20.9	5.5	5.5	26.4 %

Overall Result: Pass

Cal Gas Level	Reference Mean	Actual Mean	Alt Perf Spec	Result	Cylinder Id	Expiration Date
Mid	10.000	9.900	0	1.0	CC521808	12/13/25 05:35
Low	5.500	5.500	0	1.1	CC521782	12/20/25 05:34

Quarterly Cal Report

Stack D (SV17) - SO2 Instrument

From: 04/01/2022 00:00 **To:** 06/30/2022 23:59 **Facility Name:** Cleveland Cliffs Minorca Mine Inc

Generated: 07/12/2022 09:50 **Location:** 5950 Old Hwy 53, Virginia, MN 55792

Instrument Name: SV17_SO2_P_Instrument High Range **Serial Number:** 145

Calibration Time	Cal Gas Level	Span Value	Reference Value	Actual Value	Ref Value As Pct Span
05/04/22 13:30	Mid	20.0	11.1	10.7	55.5 %
05/04/22 13:36	Low	20.0	5.0	4.9	25.2 %
05/04/22 13:42	Mid	20.0	11.1	11.2	55.5 %
05/04/22 13:48	Low	20.0	5.0	5.1	25.2 %
05/04/22 13:56	Mid	20.0	11.1	11.9	55.5 %
05/04/22 14:00	Low	20.0	5.0	5.5	25.2 %

Overall Result: Pass

Cal Gas Level	Reference Mean	Actual Mean	Alt Perf Spec	Result	Cylinder Id	Expiration Date
Mid	11.100	11.300	0	1.6	CC521808	12/13/25 05:37
Low	5.000	5.200	0	2.5	CC521782	12/20/25 05:36